but the medicine may be administered with advantage internally in two grain doses twice daily. Arsenic, in the form of Fowler's solution, has also evidence in its favour. During the asthmatic stage, the smoking of stramonium leaves has been most successful, and so has that of the Espic cigarette.[1] The inhalation of sulphuric ether and chloroform give relief to some, but care should be taken not to render the patient insensible. Annoying symptoms may frequently be relieved by palliative measures, such as would naturally suggest themselves to any intelligent physician.

The histories of the cases with which the volume closes add very much to its value. These include descriptions of their own attacks by Daniel Webster and by the Rev. Henry Ward Beecher, both of whom have given very graphic accounts of their sufferings.

The book is an exceedingly valuable monograph, and we hope its appearance may be hailed as an evidence that hereafter American physicians intend to devote themselves more frequently than heretofore to the study and description of diseases which are either peculiar to our own country or are affected by its climate. We are sorry, however, that Dr. Wyman has not taken more pains in the composition; there are evidences of careless writing and proof reading, such as we should not have expected from one of his deservedly high reputation. Our notice is not complete if we do not add that the book contains three maps and a tabular view of eighty-one cases of autumnal catarrh.

J. H. H.

ART. XXIII.—*Thermic Fever or Sunstroke.* By H. C. WOOD, Jr., M.D., Professor of Medical Botany and Clinical Lecturer on Diseases of Nervous System in the University of Pennsylvania; Physician to the Philadelphia Hospital. The Dissertation to which was awarded the Boylston Prize, June 9, 1872. 16mo. pp. 128. Philadelphia: J. B. Lippincott & Co.

IN the preface, referring to his earlier published considerations of sunstroke, the author says: "The fact that my observations were rather derided in certain quarters, long since determined me to make at some time an experimental study of the subject. * * * * Claiming only that I have endeavoured to find the truth, and asking that my shortcomings may be pardoned, because my work has been honest in its intentions and desires."

The completeness Dr. Wood has given to his task will make his deriders as few and insignificant as his "shortcomings." So they may cease to "molest or make afraid."

The volume before us evidences that the award of the committee was based upon the thorough culture, clinical experience, and careful, laborious research—literary and experimental—which the author has employed in the fulfilment of his work.

The arrangement is into four parts: Part I.—Clinical History; Part II.—Nature; Part III.—Treatment; Part IV.—Sequelæ.

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[1] The composition of each cigarette is as follows:—

℞.	Belladonna leaves	4½	grains.
	Hyoscyamus "	2¼	"
	Stramonium "	2¼	"
	Phellandrium aquaticum leaves	¾	"
	Opium	⅕	"

It is Part II. about which will centre the chief interest of the profession. It is quite largely devoted to details of experimentation, some of which have demonstrated facts of paramount pathological importance.

The muscular system first attracted attention, from a prolonged study of which Dr. Wood arrives at the following conclusions:—

"1. Excessive rigidity of heart, due to a coagulation of its myosin, is a very pathognomonic lesion of sunstroke.

"2. That in most cases it is a post-mortem, rather than an ante-mortem phenomenon, occurring directly after death.

"3. In certain cases, the so-called cardiac variety of sunstroke, death is probably due to a sudden ante-mortem coagulation of the cardiac myosin, and, consequently, instantaneous arrest of the heart's action.

"4. That the muscles, after death from heat fever, very soon become rigid, sometimes do so instantly, and that such rigidity is of the same nature as ordinary post-mortem rigidity.

"5. That, while it is conceivably possible that death from asphyxia may occur from coagulation of the myosin of the diaphragm and other respiratory muscles, it is exceedingly probable that in man death never does actually occur from such cause."

His next inquiries were directed to the nerve-centres. A bladder was fitted over the brain of an animal, and a stream of hot water of known temperature passed through the bladder. At the height of the impression the temperature of the brain was ascertained by vivisection. The following was established:—

"First, A temperature of brain from 113° to 117° F. is sufficient, if maintained, to produce death in a short space of time, in mammals, by arrest of respiration.

"Second, That the chief symptoms induced are insensibility and convulsions, preceded by exceedingly rapid respirations and action of the heart, and unaccompanied by any general rise of temperature.

"Third, That these symptoms come on very quickly in all cases, at times with absolute abruptness."

He concludes, "That, if a temperature of 108° F. in the brain of a cat will produce these serious symptoms, it will induce no less in man."

The heat action upon nerve trunks was then tested "by exposing for several inches the sciatic nerve, passing underneath it a strip of rubber cloth, so as to isolate it from the muscles, and pouring water of a known temperature over it. At irregular intervals the conducting power of the nerve was tested by touching it with the poles of an induction battery above the heated portion." He found that the nerves would bear a heat above any occurring in sunstroke.

The results of nerve investigation are thus summed up: "That the nervous symptoms of sunstroke may be, and probably are, due to the direct action of the heat upon the cerebro-spinal axis, and that death itself by asphyxia is often brought about by the same influence."

Lastly, the question of blood-poisoning is disposed of by the fact that the blood of an animal dead from sunstroke has been injected into the veins of a living animal without injury; that the bright colour returns when shaken with oxygen, and "that at a temperature of 113° to 115°F. the amœboid movements of the white corpuscles become more active, and continue so for a greater or less length of time."

Notwithstanding these facts, there are many who will not accept them as final. Even the author occasionally leans back upon his old theory, in the vague expression of "blood deterioration."

As a diagnostic point, he lays stress upon a hot and *dry* state of the skin. The cause of this dryness is arrest of cutaneous transpiration. Cutaneous aeration has ceased, the sudoriferous excretions are retained in the blood, and must tend to destroy the vitality of that fluid. This is proved by the well-known experiments of Fourcault, Becquerel, and Breschet, where animals varnished over with impermeable coatings died—the blood presenting the same characteristics as that obtained in sunstroke. We have here death from "cutaneous asphyxia," as it is termed. Whatever technical objections may be urged, it is essentially a poisoning of the blood; and a disorganization of the plasma with destruction of corpuscular movements does not more necessarily follow than in blood poisoning from some extraneous agents. Granting in sunstroke that the heat action upon the peripheral nerve filaments arrests the cutaneous transpiratory process, yet it is the blood—thereby deoxydized, devitalized—which involves the nervous centres. An increase of body temperature above the normal can only supervene upon a disturbance of the natural chemical forces of the blood, unless the temperature of the surrounding atmosphere is equal to or beyond that of the body. It often happens in sunstroke that the temperature of the atmosphere is considerably below that of the body. It may well be inferred then that the access of body heat comes from chemical changes in the constitution of the blood; in other words, blood poisoning, secondarily affecting the heat centres. Therefore conditions of sunstroke may, and without doubt do present, produced by "blood deterioration" as a "primary" and not "secondary" manifestation. Dr. Wood's experiments were upon animals, in all of which a fatal result was rapidly induced, death occurring from overwhelming of the cerebral centres. In the absence of more positive disproving evidence, we conclude that disorganization of the blood, more or less complete, may exist, at least in those cases of sunstroke marked by slow progress and by gradual failure of the vital powers.

The production of sunstroke is thus explained :—

> "When a man is exposed to heat beyond his powers of resistance, there is a gradual, slow rise of temperature, until the stimulus of the heat becomes so intense as to paralyze either the heat-centre or the vaso-motor nerves, as the case may be, and then there is probably a sudden intensifying of the oxidation processes, and a further rise in temperature, accompanied or followed by an overwhelming of the cerebrum; in other words, intense fever with its accompaniments is developed."

Dr. Wood is inclined to the belief that fever is due to morbific impressions acting directly upon the nervous system.

The author has added the term thermic fever to the nomenclature of the disease. Heat fever, as suggested by Dr. Geo. B. Wood, it occurs to us, would be preferable. It conveys a direct meaning without mental effort on the part of the reader—an advantage to many individuals which is simply incalculable. In this respect Dr. Wood should have adhered to his motto (*pro bono publico*) rather than old association.

In treatment there is nothing particularly novel. Dr. Wood mainly relies on cold water, although he would not cast aside blisters, hypodermic injections of morphia, and chloroform. He even admits that bleeding may do good by abstracting heat, only claiming that that good is better obtained in other ways.

The fever following upon sunstroke is regarded as of the same nature as meningitis, and the line of treatment laid down in this affection is to be followed.

In conclusion, we would add that this little book is the fullest exposition of the subject in its exact scope anywhere extant, and it should be sought for in all quarters where sunstroke prevails. A. B. I.